DATE:

API#: 13.04683

State of West Virginia Department of Environmental Protection Office of Oil and Gas

7 PECEIVEL OF OIL ON

Well Operator	s Report of We	ell Work	MAI	8 25 70.7
Farm name: Joe Powell		ator Well No.:	b	
LOCATION: Elevation: 1100 ft		_	11910110	Oriv.
District: Sherman Latitude: 11800 Feet South of 39 Longitude 5050 Feet West of 81	Deg. 50		O Sec.	OTEGINI)
Company: Greer, Inc.	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address: 4787 Sassafras Ridge Rel	Tubing			
Arnoldsburg, WY 25234				
Agent: Elma Jean Mace	95/8"	300'	300'	CTS
Inspector: Ed Gainer			105110	# 7AN
Date Permit Issued: 7-22-2008	7"	2240	2240	6 300
Date Well Work Commenced: 7-30-2008	4 1/2"		5512	500
Date Well Work Completed: 3-1-2009	772"	0	10012	1 300
Verbai Plugging:		 	+	
Date Permission granted on: Rotary X Cable Rig				
Total Depth (feet): 5512 14		1	+	
Fresh Water Depth (ft.): 50 4		1		
, , , , , , , , , , , , , , , , , , ,				
Salt Water Depth (ft.): 1200 ft				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.):			1	1
OPEN FLOW DATA			r 11	CENTED . COR
Producing formation Marcellus Gas: Initial open flow O MCF/d Oil: Final open flow 6.5 MCF/d F Time of open flow between initial and f Static rock Pressure 250 psig (surface	Pay z Initial open fi inal open flow inal tests e pressure) at	one depth (ft) low		
Second producing formation	Initial open f inal open flov final tests	lowI vI Hou	Bbl/d Envir	Department
NOTE: ON BACK OF THIS FORM PUT THE INTERVALS, FRACTURING OR STIMULATING UNITED INCLUDING COAL ENCOUNTERED BY THE Signed:	FOLLOWING NG, PHYSICA GEOLOGICA	1). DETAILS L CHANGE, L RECORD (ETC. 2). THE W	ÆLL

Stump/Garrett #3 API number 0130-4683

Perforation were done at the following depths with 200 mmcf Nitrogen. No Physical Changes occurred.

Depths:	Formation:
3437	Sand
3675	Slate & Shale
3774	Slate & Shale
3807	Slate & Shale
4049	Slate & Shale
4092	Slate & Shale
4138	Slate & Shale
4152	Slate & Shale
4425	Slate & Shale
4549	Slate & Shale
4688	Slate & Shale
4881	Slate & Shale
4918	Slate & Shale
4962	Slate & Shale
5072	Slate & Shale
5080	Slate & Shale
5112	Slate & Shale
5162	Slate & Shale
5209	Slate & Shale
5348	Marcellus

WR-35 Rev (5-01) DATE: October 30, 2006 API # 047 - 015 - 02709

State of West Virginia Department of Environmental Protection Office of Oil and Gas

Well Operator's Report of Well Work

Farm Name:	Paul B. Barringer II, et al	Operator Well No.		PMOG 59		
LOCATION: Elevation:	1428	Quadran	ngle:	Swandale		
District:	Buffalo	County:		Clay		
Latitude:	14285 Feet South of 38			-		
•	11595 Feet West of 80					
Longitude	11333 1 CC: West 01	Dcg. <u>32</u> N	III 3	· · ·		
Company: Range Re	esources – Pine Mountain, Inc.	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.	
Address: P.O. Box		13 3/8	32	32		
	on, Virginia 24212	9 5/8	485	485	196	
	egg	7	2050	2050	151	
Inspector: Terry U	rban	4 1/2		3654	391	
	4/1/2004	21/2"		2097		
Date Well Work Com				<u></u>		
Date Well Work Com	pleted: <u>9/1/2005</u>					
Verbal Plugging:	tod one	ļ				
Date Permission grant Rotary x Cable			 		CEIVED	
Total Depth (feet):	Rig		 		Of Oil & Gas	
Fresh Water Depth (f				Onice	<u> </u>	
riesh water Depth (1)	<u> </u>			APR	1 1 2013	
Salt Water Depth (ft.)	: 990			i ALI	11.7.2013	
Juli Water Depth (10)				1		
Is coal being mined in	area (N/Y)?			 WV D e	partment of	
Coal Depths (ft.):				Environme	ntal Protection	
_						
OPEN FLOW DATA						
_		Pa:			(ft)	
Gas: Initial op	***************************************	l: Initial open		_ Bbl/d		
Final ope	en flow: 146 MCF/d	Final open f	flow:	_ Bbl/d		
Time of	open flow between initial and	final tests	4 Hour	'S		
Static Rock Pr	essure 175 psig (surface	pressure) afte	r <u>24</u> I	lours		
Second Produci	ng Formation:	Pa	y zone depth	(ft)		
Gas: Initial op	· · · · · · · · · · · · · · · · · · ·	l: Initial open	-	Bbl/d		
Final ope		Final open		Bbl/d		
-	open flow between initial and	-				
	essure psig (surface			s Hours		
Static Rock Fi	essure psig (surface	pressure) arre	·1 1	10415		
PERFORATI ETC. 2) THI OF ALL FOR	THE BACK OF THIS FORE ED INTERVALS, FRACTURING E WELL LOG, WHICH IS A SY EMATIONS, INCLUDING COAL RAPPORT RESOURCES	NG OR STIMU STEMATIC DE L ENCOUNTER	JLATING, P.ETAILED GEORED BY THE	HYSICAL CHA OLOGICAL REC WELLBORE.	NGE,	
Bv:	Range Resources -	I THE MIDE	ANTOIN ILY	ne.		
Date:	HILL			•		
4101	77 7 71 7 1 5					

Completion Data

	Stage 1		Stage 2		Stage 3	
Date	7/28/2005		7/28/2005		8/3/2005	
	75Q N2		75Q N2		75Q N2	
Frac	Foam		Foam		Foam	
Formation(s)	Dev Sand		Big Lime		Big Lime	
Interval	3065-3409		1950-2007		2048-2105	
# of Perf	20		20		18	
BD Press	2014	psi	3050	psi	?	psi
Avg Treating Press	1624	psi	2500	psi	2650	psi
Max Treating Press	1725	psi	3200	psi	2898	psi
_		bp		bp		bp
Avg Rate (dh)	32.3	m	30	m	27	m
ISIP	1250	psi	1900	psi	1650	psi
5 min SIP		psi		psi		psi
Total Acid	500	gal	756	gal	935	gal
Total N2	323	scf	158	scf	158	scf
Total H2O	202	bbl	199	bbl	168	bbl
Total Sand	499	SX	253	SX	217	SX

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Office of Oil & Gas

APR 1 1 2013

WV Department of Environmental Protection

Geologic Data

Lithology	Color	Тор	Bottom	Thicknes s
SANDY SHALE		0	5	5
CLAY	BROWN	5	11	6
SANDSTONE		11	130	119
COAL		130	135	5
SANDY SHALE		135	160	25
COAL		160	168	8
SANDSTONE		168	205	37
SANDY SHALE		205	300	95
SANDSTONE		300	370	70
SANDY SHALE		370	411	41
SANDSTONE		411	571	160
SANDY SHALE		571	850	279
COAL		850	880	30
SANDY SHALE		880	1120	240
COAL		1120	1136	16
SANDSTONE		1136	1214	78
SANDY SHALE		1214	1298	84
COAL		1298	1301	3
SANDY SHALE		1301	1393	92
SANDSTONE		1393	1461	68
SANDY SHALE		1461	1602	141
SANDSTONE		1602	1668	66
SANDY SHALE		1668	1682	14
SHALE		1682	1700	18
SANDY SHALE		1700	1775	75
SANDSTONE		1775	1805	30
SANDSTONE		1805	1815	10
SANDY SHALE		1815	1869	54
LIMESTONE		1869	1895	26
SANDY SHALE		1895	1906	11
LIMESTONE		1906	1917	11
SHALE		1917	1955	38
LIMESTONE		1955	2160	205
SHALE & SAND	Y SHALE	2160	2210	50
SANDY SHALE		2210	2429	219
SHALE		2429	2912	483
SANDY SHALE		2912	3200	288
SHALE		3200	3266	66
SANDSTONE		3266	3390	124
SANDY SHALE		3390		

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APR 1 1 2013

WV Department of Environmental Protection

WR-35 Rev (9-11)

State of West Virginia Department of Environmental Protection Office of Oil and Gas Well Operator's Report of Well Work

DATE:	3/28/2013
API #:	47-5101391

en Operator's Report of Well Work	化(比IVEL)	
	the stell and for	

Quadrangle:					
	Cameron		APR 0.8 2		
County: Mars	shall		March to		
g. <u>56</u> Min	n. 64.41 S	ec. L iv ec.	THE WAY AND		
Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.		
24"		80'			
20"		395'	393.45		
13.375"		1182'	1161		
9.625"		2368'	945		
5.5"		10415'	994		
y zone depth (ft) n flowE lowBHour	7429' Bbl/d bl/d s	data on separate s	heet)		
	y zone depth (ft) n flow E low Hour n after Hour zone depth (ft) n flow E	ay zone depth (ft) 7429' In flow Bbl/d Bbl/d Hours after Hours zone depth (ft) In flow Bbl/d Bbl/d	n flowBbl/d lowBbl/dHours) afterHours zone depth (ft) n flowBbl/d		

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete,

Static rock Pressure _____psig (surface pressure) after _____Hours

Were core samples taken? Yes	ing drilling? Yes	No_X		
Were Electrical, Mechanical or Geoph	ysical logs recorded on this w	ell? If yes, please list_n/a	1	
NOTE: IN THE AREA BELOVER FRACTURING OR STIMULATING DETAILED GEOLOGICAL RECOUNTERED BY THE	NG, PHYSICAL CHANGE, CORD OF THE TOPS AN	ETC. 2). THE WELL L ID BOTTOMS OF AL	OG WHICH IS A S L FORMATIONS,	YSTEMATIC INCLUDING
Perforated Intervals, Fracturing, or Sti	mulating:		En large	~ 4U 3 Mari
7702' - 8056', 8121' - 8475', 85	40' -8894', 9413' - 9847'	, 9965' - 10021'	200	
Plug Back Details Including Plug Typ	e and Depth(s):			<u></u>
Formations Encountered: Surface:	Top Depth	/	Bottom	Depth
Dirt & Rock	0'	1		80'
Sand & Shale	80'	1		310'
Shale	310'	1		670'
Sand & Shale	670'	1		1210'
Shale	1210'	1		1337'
Sand & Shale	1337'	1		2430'
Shale	2430'	1		2650'
Sand & Shale	2650'	1		2890'
Sandstone	2890'	1		3400'
Shale	3400'	1		4718'
Sand & Shale	4718'			5365'
Silt/ Shale	5365'			6130'
Sand & Shale	6130'			6512'
Marcellus	6512'	<u> </u>		10427'
IVI al Cellus	0012	•		· · · · · · · · · · · · · · · · · · ·

WR-35 Rev (5-01) DATE: <u>December 17, 2007</u>
API # 047 - 067 00894

State of West Virginia Department of Environmental Protection Office of Oil and Gas

Well Operator's Report of Well Work

Farm Name:		MA	VAN, LLC	et al		Oper	ator We	il No.	De	itz 3	
LOCATION:	Elevation	:	18	393'	······	Quad	rangle:		Lockwo	ood	
D	istrict:		Jefferson	1		Cour	ity:		Nicholas		
L	atitude:	6500'	Feet South		Deg.		Min.	00	Sec.		,
L	ongitude:	4275'	Feet Wes	t of 81	_ Deg.	05	Min.	00	Sec.		
Company:	Range l	Res-Pine l	Mountain	Inc.	Casing Tubing		Used drilli		Left in well	Cement fill up Cu. Ft.	
Address:	P.O. Bo				11	3/4	2	8 .	28		
	Abingd	on, Virgi	nia 24212		8 5		3	98	398	150]
Agent:	Tom Yo				4 !		26	96	2696	444	
Inspector:	Terry U	Jrban			2 3	<u>/8</u>			2715	<u></u>	
Date Permit			6/6/2007						- 	 	1
Date Well V			9/7/2						ļ		1
Date Well V Verbal Plug		pleted:	11/2/2	2007					R	ECEIVED	<u> </u>
Date Permis		ted on:							Office	of O11 & C	as
Rotary _	Cable	R	ig						<u> </u>	<u> </u>]
Total Depti			2705'		<u> </u>				Α	PR 1 1 2013	
Fresh Wate	r Depth (f	t.): <u>17</u>	0'							<u> </u>	_
Salt Water	Depth (ft.)) <u>:</u>							l wvi	epartmer	t of
Duit Water	Dopus (su)								Environ	mental Pro	itection
Is coal bein	g mined in	area (N/	Y)?	N	-				<u> </u>		1
Coal Depth	-	-]
	OW DAT		Big L	.ime/Blue N	londay		Pay zor	ne dept	h 2518-2574	(ft)	
	Initial or	_					en flow	-	Bbl/d		
	Final op			MCF/d		-	n flow:		Bbl/d		
	-			n initial ar		-			ours		
Ctati	c Rock Pr	•		Psig (surfa							
Stati	C IXOUR I I	Casure	1220	aig (auria	cc press	uro) a			· IIOUID		
Seco	nd Produci	ng Forma	tion:				Pay zoi	ne dept	h	_ (ft)	
Gas:	Initial o	en flow:]	MCF/d (Oil: In	itial op	en flow	":	Bbl/d		
	Final op	en flow:	1	MCF/d	Fi	nal ope	n flow:		Bbl/d		
	Time of	open flo	w betwee	n initial ar	nd final	tests		Ho	ours		
Stati	c Rock Pi	essure	3	Psig (surfa	ce press	ure) a	fter		Hours		
PE E1	RFORAT CC. 2) TH	ED INTE E WELL RMATIO	ERVALS, LOG, WHI NS, INCLU	FRACTUR ICH IS A S IDING CO.	ING OF YSTEM AL ENC	R STI ATIC OUNI	MULA' DETAI ERED	TING, LED C BY TI	ING: 1) DETA PHYSICAL CI GEOLOGICAL F HE WELLBORE	HANGE, LECORD	
	Signed: By:	- Dan	ge se	Sources		e 141	ULINTO	ב. חצו	LAC.		
	Date:	Don	na Ti	fere							
	Daic.			•							

Completion Information

Well	Deitz 3					
Permit	47-067-00894 Stage 1		Stage 2		Stage 3	
Date	10/12/2007		11/2/2007 75Q N2		11/02/2007 75Q N2	
Frac Formation(s)	75Q N2 Foam Big Lime		Foam Big Lime		Foam Blue Monday	
1 0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2.8 2		g			
Interval	2696-2724		2568-2574.5		2510-2524	
# of Perf			15+15		13	
BD Press	500	psi	400	psi	1863	psi
Avg Treating Press	2700	psi	2940	psi	2777	psi
Max Treating		-		-		
Press	4000	psi	3200	psi	2870	psi
Avg Rate (dh)	21	bpm	22.4	bpm	19	bpm
ISIP	4000	psi	1967	psi	2563	psi
2 min SIP		psi	1670	psi	2200	psi
Total Acid	500	gal	800	gal		gal
Total N2	240,000	scf	382,000	scf	324,000	scf
Total H2O	268	Bbl		bbl		bbl
Total Sand	175	SX	418	SX	595	SX

Geologic Information

Formation	Top (ft)*	Bottom (ft)*
Sand and Shale	0	1456
Salt Sand	1456	1655
Sand and Shale	1655	2155
Middle Maxon	2155	2205
Shale and Sand	2205	2455
Little Lime	2455	2528
Pencil Cave Shale	2528	2550
Big Lime	2550	2716
TĎ	2716	

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WV Department of Environmental Protection WR-35

DATE: November 04, 2008 API #: 47-097-03503

State of West Virginia Division of Environmental Protection Section of Oil and Gas

Well Operator's Report of Well Work

	Farm name: BETTY RUSMISELL	Operator	Well No.: <u>6</u>	26776	
	LOCATION: Elevation: 1459'	Quadran	gle: <u>ADRIA</u>	N 7 1/2	
	District: BUCKHANNON	County:	UPSHUR		
	Latitude: 5700 Feet South of 3) Sec.	
	Longitude 9450 Feet West of 8				
	Doughed				
•	Company: CHESAPEAKE APPALACHIA, L.L.C.	Casing &	Used in	Left in well	Cement fill
		Tubing &	Drilling	Leit in wen	up Cu. Ft.
-	Address: Post Office Box 6070	1.40.1.5			
-	Charleston, WV 25362-0070	20"	46'	46'	DRIVEN
-	Agent: Michael John	11 ¾"	165'	165'	CTS
-	Inspector: Bill Hatfield	8 5/8"	1722'	1722'	CTS
-	Date Permit Issued: 03/13/2008	4 1/2"	7655'	7655'	292
-	Date Well Work Commenced: 04/11/2008				
-	Date Well Work Completed: 06/04/2008				
•	Verbal Plugging:				
-	Date Permission granted on:	 			
-	Rotary XX Cable Rig				
•	Total Depth (feet): LTD: 7659'; DTD: 7655'			RE	CEIAED
-	Fresh Water depths (ft): 46', 170'			Office	of Oil & Gas
	Tiest water depart (29).			- United	
	Salt water depths (ft): 1722'			ADI	0 9 2013
	Balt Water deputs (15).			AF	- 0 3 - 0 m -
	Is coal being mined in area (Y/N)? No				1 1 6
	Coal Depths (ft): 165'-170'	<u></u>		WV D	partment of
	Coar Depais (19.	ı	· .	hvironm	ental Protection
	OPEN FLOW DATA				•
	Producing formation Marcellus	Pay z	zone depth (ft)	<u>7392-7344</u>	
	Gas: Initial open flow Oil:	F/d Init	ial open flow	Bbl/d	1
X	Cas. Indian Open III	Fina	al open		
	Final open flow MCI			_ Bbl/d	
	Time of open flow between initial and final tests		4 Hours		
	Static rock Pressure 1500 psig (sur	rface pressure) a	after <u>72</u>	_ Hours	
		_	1 .1 (0)		
	Second producing formation		zone depth (ft)		1
	Gas: Initial open flow MCF/d	Oil: Initial o	pen flow	Bbl/c	1
	Final open flow MCF/d	Final op	en flow	Bbl/d	
	Time of open flow between initial and f	inal tests	Hour	3	
	Static rock Pressure psig (sur	rface pressure)	after	Hours	
	NOTE: ON BACK OF THIS FORM PUT THE FOLLO INTERVALS, FRACTURING OR STIMULATIN LOG WHICH IS A SYSTEMATIC DETAILED INCLUDING COAL ENCOUNTERED BY THE W	NG, PHYSIC GEOLOGICA	AL CHANGE L RECORD	OF ALL FO	ORMATIONS,
	Signed: Mark Watkins, District Manager			ia, L.L.C	<u>.</u>
	Date: 11/4/08	-	•		·

FORMATION RECORD: Well
0 to from Driller's Log Book,

to TD from Gamma Ray Log

		ROCK TYPE]			
		(described rock types and other minerals				
		penetrated and record occurrences of oil,				
FROM	TO	gas and water from surface to total depth)				
0	165	Sand & Shale	WATER:	Depth (ft)	Amount	Type
165	170	Coal	1	46'	Damp	Fresh
170	1070	Sand & Shale	1	170'	Damp	Fresh
1070	1314	Maxon				
1314	1508	Sand & Shale]			
1508	1532	Little Lime				
1532	1772	Big Lime		L		
1772	1789	Injun	1			
1789	1832	Sand & Shale				7
1832	1892	Weir	GAS CHECKS:	Depth(ft)	MCF/D	
1892		Pocono Shale			1	
	2252	ab th	4			_
2252	2397	4th & 5th Sands	4	100		_
2397	2568	Pocono Shale	_	Offi	EIVED	
2568	2619	Speechly	_	Office c	f Oil & C	as
2619	2974		_		<u> </u>	4
2974		Balltown		AYK	0 9 2013	
2020	3030	Pocono Shale	-		, , , , , , , , , , , , , , , , , , , 	-
3030 3472	3472 3584	Riley	1	MAY Don		
3584	4258	Pocono Shale	┥ ┍.	AAA DEK	artmen	FOT
4258	4340	Benson	⊣ En	vironme	htal Prot	ection
4340	4634	Devonian Shale	1			1
4634	4714	Alexander	1	1	<u> </u>	_
4714	7114	Devonian Shale	1			
7114	7156	Geneseo	OIL SHOWS:	Depth	Amount	7
7156	7194	Tulley	1			1
7194	7305	Hamilton Shale	1]
7305	7390	Marcellus]]
7390	7406	Onandaga Lime]			
7406	7659	Oriskany	PERFORATION	IS:		
			Stage 1:			
			Marcellus: 7392-	-7344, 192 ho	les, 4 spi	
			4			
			4			
	<u> </u>		4			
			4			
			CTIME ATION	г.		
			STIMULATION Stage 1:	1.		
	<u> </u>		Marcellus:			
	+			bls of Slickw	ater. 240.000	# 40/70 & 270,000#
	-					ΓP=6200 psi, ISIP:
	 		3083 psi, 5 min:		<i>z</i> ,	• •
-	 		-	-		
-	 		7			
—	 	 	1			
	—					
†	1		1			
L		<u> </u>				

Date API#

November 1, 2010 47-097-03665

State of West Virginia Division of Environmental Protection Section of Oil and Gas Well Operator's Report of Well Work

800

Farm Name:

Delmar Light 1H

Operator Well No.:

831090

LOCATION

Elevation:

1745'

Quadrangle:

Adrian

District:

Latitude:

Longitude:

Buckhan

County:

Upshur

non 4600ft

12650ft

South of West of

006 00" 390 15

00"

Company: Chesapeake Appalachia, L.L.C.

P.O. Box 18496

OKC, OK 73154-0496

Agent: Eric Gillespie

Inspector: Bill Hatfield

Date Permit Issued: 06/25/2009

Date Well work commenced: 04/16/2010 Date Well Work completed: 6/28/2010

Verbal Plugging Permission

Granted on / /

Rotary
☐ Cable ☐ Rig

Total Depth (ft):13065' TVD (ft):7552'

Fresh Water Depth (ft):62' & 275'

Salt Water Depth (ft.):NA

Is coal being mined in area (Yes No 🖾)

Coal Depths (ft):270' & 275'

Was this well logged and plugged back?

Yes No_X__ if yesdepth cement plug set

		O	fice of Oil & G
			RECEIVED.
5 1/2"	13065'	13065'	1919 CF
9 5/8"	1727'	1727'	714 CF
13 3/8"	475'	475'	609 CF
20"	40'	40'	Driven
Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.

APR 09 2013

WV Department of **Environmental Protection**

Open Flow Data

1st Producing Formation

Pay Zone Depth 7,801 ft to 12,923 ft

hours

Gas: Initial Open Flow 802 Mcf/day Oil: Initial Open Flow

bbl/day

Final Open Flow

Static Rock Pressure

Mcf/day

Final Open Flow

bbl/day

Time of Open Flow between Initial and Final Tests In

Line

hours

3,398 psig after

2nd Producing Formation

Mcf/day

Pay Zone Depth Oil:

ft to Initial Open Flow

bbl/day

Final Open Flow

Gas: Initial Open Flow

Mcf/dav

Final Open Flow

bbl/day

hours

Time of Open Flow between Initial and Final Tests Static Rock Pressure psig after

hours

3rd Producing Formation

ft to

Gas: Initial Open Flow

Mcf/day

Pay Zone Depth Oil:

Initial Open Flow

ft

fì

bbl/day

Final Open Flow

Mcf/dav

Final Open Flow

bbl/day

Time of Open Flow between Initial and Final Tests

hours

Static Rock Pressure

psig after

hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Chesapeake Energy Well No.: 831090

8th Stage

Perforate	d Intervals			
1 st Stage	Marcellus	10	Holes from	12,601 ft to 12,923
2 nd Stage	Marcellus	10	Holes from	12,201 ft to 12,523
3 rd Stage	Marcellus	10	Holes from	11,801 ft to 12,123
4 th Stage	Marcellus	10	Holes from	11,401 ft to 11,723
5 th Stage	Marcellus	10	Holes from	11,001 ft to 11,323
6 th Stage	Marcellus	10	Holes from	10,601 ft to 10,923
7 th Stage	Marcellus	10	Holes from	10,201 ft to 10,523
8 th Stage	Marcellus	10	Holes from	9,801 ft to 10,123
9th Stage	Marcellus	10	Holes from	9,401 ft to 9,723
10 th Stage	Marcellus	10	Holes from	9,003 ft to 9,330
11th Stage	Marcellus	10	Holes from	8,601 ft to 8,923
12 th Stage	Marcellus	10	Holes from	8,201 ft to 8,523
13 th Stage	Marcellus	10	Holes from	7,801 ft to 8,123

Fracturing / Stimulation 1st Stage Type of Treatment Slickwater Total Acid 5,000 Gal of 15% HCl Breakdown Pressure 7,170 psi Average Rate 66.3 scf/min 🔲 or bpm 🔀 ATP 7,026 psi | MTP 9,199 psi Total Nitrogen 0 scf Total Sand 119,663 lb of 100 mesh Total Fluid 9,105 bbl Total Sand 261,243 lb of 40/70 5 min 3,738psi ISIP 4,450 psi 2nd Stage Type of Treatment Slickwater Total Acid 2,500 Gal of 15% HCl Breakdown Pressure 7,036 psi Average Rate 86.5 scf/min 🔲 or bpm 🔀 ATP 7,716 psi | MTP 8,362 psi Total Nitrogen 0 scf Total Fluid 9,019 bbl Total Sand 122,742 lb of 100 mesh Total Sand 270,112 lb of 40/70 5 min 3,917 psi ISIP 4,663 psi 3rd Stage Type of Treatment Slickwater Total Acid 2,500 Gal of 15% HCl Breakdown Pressure 8,205 psi Average Rate 83.4 scf/min or bpm ATP 7,692 psi | MTP 8,480 psi Total Sand 122,085 lb of 100 mesh Total Fluid 11,567 bbl Total Nitrogen 0 scf Total Sand 285.621 lb of 40/70 ISIP 4,443 psi 5 min 3,745 psi Type of Treatment Slickwater 4th Stage Breakdown Pressure 7,954 psi Total Acid 2,500 Gal of 15% HCl Average Rate --- scf/min or bpm 🛛 ATP --- psi MTP --- psi Total Fluid 10,474 bbl Total Nitrogen 0 scf Total Sand 124,340 lb of 100 mesh Total Sand 285,452 lb of 40/70 5 min 3,927 psi ISIP 4,530 psi Type of Treatment Slickwater 5th Stage Breakdown Pressure 7,781 psi Total Acid 2,500 Gal of 15% HCl ATP 8,090 psi | MTP 8,582 psi Average Rate 85.3 scf/min or bpm Total Nitrogen 0 scf Total Sand 120,622 lb of 100 mesh Total Fluid 14,769 bbl Total Sand 268,619 lb of 40/70 ISIP 5,183 psi 5 min 4,270 psi 6th Stage Type of Treatment Slickwater Breakdown Pressure 7,437 psi Total Acid 2,500 Gal of 15% HCl ATP 7,801 psi | MTP 8,544 psi or bpm Average Rate 87 scf/min Total Fluid 10,423 bbl Total Nitrogen 0 scf Total Sand 124,901 lb of 100 mesh Total Sand 295,293 lb of 40/70 ISIP 4,661 psi 5 min 4,093 psi 7th Stage Type of Treatment Slickwater Total Acid 2,500 Gal of 15% HCl Breakdown Pressure 7,904 psi Average Rate 86 scf/min 🔲 or bpm 🔀 ATP 7,693 psi | MTP 8,584 psi Total Fluid 11,523 bbl Total Nitrogen 0 scf Total Sand 119,598 lb of 100 mesh Total Sand 294,305 lb of 40/70 5 min 4,000 psi ISIP 4,625 psi

Type of Treatment Slickwater

Breakdown Pressure 7,904 psi

Total Acid 2,500 Gal of 15% HCl

			-1	1 1 2 2 2 2 2 2	
	Average Rate 91 scf/min	🗌 or bpm 🛛	ATP 7,723 ps	i MTP 8,499 psi	
	Total Fluid 10,573 bbl	Total Nitrogen 0 scf		2,234 lb of 100 mesh	
			Total Sand 28	5,531 lb of 40/70	
	ISIP 4,554 psi	5 min 3,850 psi			
9th Stage		Type of Treatment Slick	Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15	% HCl		Breakdown Pressure 7,322 psi	
	Average Rate 87 scf/min	or bpm	ATP 7,440 ps	MTP 7,988 psi	
	Total Fluid 9,414 bbi	Total Nitrogen 0 scf	Total Sand 11	9,714 lb of 100 mesh	
				282,948 lb of 40/70	
· · · · · · · · · · · · · · · · · · ·	ISIP 4,668 psi	5 min 4,080 psi		l .	
10 th Stage		Type of Treatment Slickwater			
	Total Acid 2,500 Gal of 15			essure 8,217 psi	
	Average Rate 87 scf/min	or bpm 🛛	ATP 7,382 psi	MTP 7,870 psi	
	Total Fluid 11,253 bbl	Total Nitrogen 0 scf	Total Sand 12	4,000 lb of 100 mesh	
		<u> </u>		0,000 lb of 40/70	
	ISIP 4,391 psi	5 min 3,845 psi	-		
11th Stage		Type of Treatment Slickwater			
	Total Acid 2,500 Gal of 15	6 HCl Breakdown Pro		essure 7,213 psi	
	Average Rate 85 scf/min			MTP 7,458 psi	
	Total Fluid 9,500 bbl	Total Nitrogen 0 scf		2,000 lb of 100 mesh	
		3		0,000 lb of 40/70	
	ISIP 5,252 psi	5 min 4,354 psi		Í	
12th Stage		Type of Treatment Slickwater			
	Total Acid 2,500 Gal of 15			essure 6.864 psi	
	Average Rate 87 scf/min	or bpm 🛛		MTP 7,800 psi	
	Total Fluid 10,782 bbl	Total Nitrogen 0 scf		3,496 lb of 100 mesh	
				,694 lb of 40/70	
	ISIP 4,422 psi	5 min 3,721 psi		,	
13th Stage		Type of Treatment Slick	water		
	Total Acid 2,500 Gal of 15			essure 6,695 psi	
	Average Rate 87 scf/min	or bpm 🛛		MTP 8,115 psi	
	Total Fluid 10,353 bbl	Total Nitrogen 0 scf		,318 lb of 100 mesh	
				,026 lb of 40/70	
	ISIP 4,082 psi	5 min 3,560 psi		,	
Wall Tax	1 1,000 po-				

Well Log

Formation Name	Тор	Bottom	Comments
MAXTON	1367	1439	
LITTLE LIME	1613	1677	
BIG LIMB	1677	1864	
BIG INJUN	1864	1887	
GANTZ	1931	1996	
GORDON	2013	2034	
4 TH SAND	2369	2384	
5 TH SAND	2419	2485	
BAYARD	2525	2533	
ELIZABETH	3667	2686	
WARREN	2782	2843	
BEDFORD	3562	3572	
SPEECHLEY	3124	3137	
BALLTOWN	3305	3370	
RILEY	3936	3945	
BENSON	4323	4366	
. ELK	5781	5812	
SYCAMORE	6595	6609	
MIDDLESEX	6977	7296	
GENESEO	7296	7330	
TULLY	7330	7362	
HAMILTON	7362	7461	
UPPER	7461	7513	
MARCELLUS			
PURCELL	7513	7515	
LOWER	7515	7574	
MARCELLUS	1		

97-03665

Signed:	Mal Odlu-
_	CHESAPEAKE APPALACHIA, LLC
Ву:	
Date:	Man 16 7010